Standard materials used in drilling and completion of water wells should cause little change or degradation in organic constituents in the ground water if proper sampling methods are used. Hanford ground water is anoxic, therefore, aeration of a well water sample sample will not occur unless the pumping method mixes air with the water. Whether the well is screened or perforated should make no difference. Also, the method of well completion should make little difference in material exchange. If anything, screened completion could cause more introduction of metallic elements to the sample because of the larger cross-sectional area. In any case, the important thing is to assure that the sample contact time of the water with the well and pump materials is as short as possible. This is accomplished by removing several "well volumes" from the well as quickly as possible and sampling immediately thereafter. The submersible pumps installed in most of our wells should provide good, representative samples, because they exchange the well water rapidly and provide for short resident time in the pump and pump column. Air contact or exchange can be eliminated or minimized by use of a dip-discharge tube or an in-line pressure sampler. The special pumps probably will also provide a good sample, although the water will be in contact with the well casing/screen and the pump and pump column for an extended period of time. Cross-contamination will always be a perceived problem because you are reusing the same pump, perhaps over a wide range contaminant concentrations. You should be cautious that the detergents used in cleaning the pumps do not contain ingredients that you are attempting to detect. Simple rinsing may not totally remove the detergent or the contaminants. You should take this opportunity to take sample by the dip method, the submersible pump, and the new special pumps, and compare the resulting analyses.

The sample container and the transportation environment are are the most important elements in the sampling process. Have you checked to determine that glass is the best container? Some materials have the nasty habit of plating out on glass. Sample chilling and protection from the sun is important. Is sample acidization an acceptable method of preservation where trace-level organic chemicals are involved?

I hope that you use this reconnaissance project to assist in determining the factors that are actually important in sampling for organics in ground water and to determine where special materials are required in the sampling/transportation/analysis.

JRR:ks